

BBECA SCIENTIFIC ADVISORY PANEL WORKSHOP

Monday, May 14th, 2018, 10:30am – 4:00pm
Arbutus Meeting Room, Metro Vancouver, Parks West Area Office
130-1200 West 73rd Avenue, Vancouver, BC

Attending:

- Robyn Worcester (RW) - Metro Vancouver
- Markus Merkens (MM) - Metro Vancouver
- Sarah Howie (SH) – City of Delta
- Paul Whitfield (PW) – SAP
- Dan Moore (DM) - SAP
- John Jeglum (JJ) – SAP
- Allan Dakin (AD) – SAP

Regrets:

- Ken Brock (KB) – Environment Canada
- Mike Brotherston (MB) – City of Delta
- Jeff Fitzpatrick (JF)- Metro Vancouver
- Patrick Spillner (PS) - Metro Vancouver
- Richard Hebda (RH) – SAP

Guests:

- Andrew Elves (AE) – UVic Ecological Restoration, MSc student of Richard Hebda
- Johannes Exler (JE) – UBC Dept. of Geog., PhD student of Dan Moore
- Katie Wiese (KW) – SFU/BCIT Ecological Restoration, MSc student of Ken Ashley

Day 1 – OVERVIEW AGENDA

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| 1. | Introductions | RW |
| 2. | Review Agenda | RW |
| 3. | Review Action Items | RW |
| 4. | Operational Update | RW/SH |
| 5. | 72 nd Ave Upgrades | SH |
| 6. | Hydrological Monitoring and Research Update | SH |
| 7. | UBC water balance update | JE/DM |
| 8. | UVic Sphagnum spectral study | AE / RH |
| 9. | BCIT/SFU Student Project Proposal | KW |
| 10. | Vegetation Monitoring | RW |
| 11. | Discussion about Peer Reviewing articles | PW/SH |
| 12. | Review Scientific Research Strategy | SH/ RW |
| 13. | Birch Control Pilot Project | RW/SH |
| 14. | Data Management/Sharing | RW |
| 15. | Open Discussion | All |
| 16. | Next Meeting | |



REVIEW ACTION ITEMS (RW)

- Action: MV/Delta to work on preparing a letter about fire risks and deadline for answer to MOTI – to speak to SAP’s concerns for clarity about what they are doing – Done (update below)
- Action: Get Thomas to add 2016 burn site vegetation plots (Done)

OPERATIONAL UPDATE (RW/SH)

AM 730 Project Update (RW)

- TerraCana and West Tower have completed the bases and the tower.
- The rest of the work should be completed in August.
- In extreme fire conditions they have been warned they can be denied access via 80 St. An alternate access route to their property is through Cranwest Farm, which is controlled by the farmer’s gate. Farmer tries to keep the gate closed to prevent access.

BC Hydro Project (RW)

- BC Hydro is decommissioning the 60kV transmission line that passes through Burns Bog and will need access for crews to remove the poles and conductor.
- Have submitted a BBCECA Project Approval permit and we will meet in a few weeks – “3 wood structures cut the pole into manageable chunks and carry offsite. If not possible they will be helicoptered out.”
- They are planning on performing this work during the water notification window that we’ve been provided which is Jul 15, 2018 – Sep 15, 2018.
- The site is the area just west of 64th

West Area Boundary Changes (RW)

- Abbotsford is opting out of Metro Vancouver. Metro has no services in Abbotsford other than the parks.
- Delta will be moving to the central area from the west. The new Metro office will be located in Burnaby. The process for Delta will remain the same for now.
- The Operations team will stay the same but move to the Burnaby Office in June, all support from admin and office staff (including the Area Manager) will change incrementally to the Central Area office by the end of 2018.

Route Recce / GPS Update (RW)

- There has been a lot of research activity in the Bog. The trails are flooded and there is vegetation overgrowth.
- Planning meeting this spring – inventory trails now, decide which to keep, remove or add after
- LA/JS/SH/SC/RW will revisit the trails in the Bog over the next several months to re-GPS them and modify the maps
- Routes will be flagged with special flagging to know where you are and the map will correspond the trails. Old flags are being removed.
- Will update Delta Fire with current maps during fire season.

Invasive Species Management (RW)

- The invasive plant control contract has gone out already for knotweed.
- We have been doing herbicide treatment of RCG adjacent the 80 St berm, as well as for the garlic mustard patch. Ongoing in 2018
- Waiting for the growing season to see if the doses need to be increased or change herbicides. If it worked well we will continue with this process
- Birch Control pilot project
 - Birch seedlings have been removed by BCIT and SFU students.
 - 90 students came over 2 days
 - They pulled 5000 m2 of seedlings in a 20m strip along 80 St.
 - Will be waiting for drier weather to do the last stretch and the end of fire season.
 - Next session is on May 23rd

Pineland Peat (SH)

- They will be installing monitoring wells along two transects from the ditch to 100m into the bog for water table and chemistry monitoring before development. They still need to get the access permit.
- Since the monitoring wells were not installed during the past wet season, Delta has requested that data be collected in the following wet season (i.e. November 2018-March 2019) in addition to the 2018 dry season.
- Planning a field trip to the SFPR berms to look at planting options for the new berms.

72 Ave and Highway 91 Interchange (SH)

- Reminder: SAP wanted all the trees removed between the overpass and the highway property line due to the fire risk. However, BA Blackwell's report notes that birch trees are good to keep because they have a low fire risk and can act as a fire break. The final request to the Province was to retain the birch and remove conifers and the dead and dying trees. However, the Province ended up removing all trees, as originally planned.
- Latest hydrology report from the Province
- SAP raised concerns about the hydrological models – will submit comments to the team on the reports (MOTI reports shared with SAP by Delta).
- RH, AD and JJ to continue providing MOTI with their feedback

72ND STREET ROAD WORKS (SH)

- See attached: "SHowie_Delta_SAP2018"
- Cranwest wants to move the gate to the south on 72 St and gravel the road. Large trucks are not able to turn off 72 St with cars parking at the current gate location. Staff are to park on the west side of 72 St, either right next to the gate or further back by the pump station. Cranwest plans to add a berm north of the forested property to prevent water from the reservoir leaking into the Bog.
- There is a proposal to upgrade the wet hogfuel section of 72 St between Delta's repeater tower and the Vancouver Landfill. Delta Engineering is okay with upgrading the road but has not yet budgeted for this project.

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- Plan is to place new hogfuel underlain with geogrid
 - SAP accepts this approach
 - Recommendation to install monitoring wells on either side of the road for water levels and water chemistry, and perhaps also vegetation plots.
 - Suggestion to install corrugated culverts under the road to maintain water movement.
 - Comment that cedar chips should not be used. Douglas-fir and western hemlock would be a good option. AE provided further research confirming these species choices and noting that bark and sawdust are to be avoided.
 - Cranwest is working with Fortis BC to farm the Fortis ROW. Drainage from the bog currently goes through the ROW. Cranwest wants to raise the road up to stop flooding and install a metal bridge and have a dam hanging down from the bridge to hold back water and prevent pipe compression.

See attached “SAP 2018 presentations:

- **HYDROLOGICAL MONITORING AND RESEARCH UPDATE (SH)**
 - Underground wall planned at 96 St (pilot project)
 - Edge of bog is quite dry, so ditch blocking is focused there
 - Summer water levels throughout the bog continue to be drier than average
 - SH, PW, and DM are working on a paper about the moisture deficit calculations
 - Outflow monitoring will continue through September, and the data will be given to JE for his water balance model
 - Planning on dry season saturated hydraulic conductivity measurements this summer
- **UBC BOG HYDROLOGICAL STUDIES UPDATE (JE/DM)**
 - UBC will leave weather station in place at flux tower indefinitely
 - JE will be compiling water balance model over the next year
- **UVIC SPHAGNUM SPECTRAL STUDY (AE/RH)**
- **BCIT / SFU STUDENT PROJECT PROPOSAL (KW)**
 - KW provided an overview of her proposed research. SAP recommended minimising the variables of the study (e.g. time since disturbance, type of peat harvesting method). A research plan will be circulated to the SAP for comment.
- **VEGETATION MONITORING (RW)**
 - Continued as usual at 50 plots. New 2016 burn site added in 2017
 - Sphagnum cover estimates remain consistent and relatively high
 - In Zones B to D (60% to 73%)
 - 2017 showed a rebound in mean cover values from the low year of 2016
 - control plots have maintained over 90% cover of Sphagnum in the same interval
 - Plant species presence and cover data, not collected in 2017
 - 21.5% of trees being monitored have died in zones A-D
 - 2016 Burn Site: 16 new plots in 2017
 - Sphagnum plants of three species (*S. capillifolium*, *S. papillosum*, *S. tenellum*) were found healthy and unburned
 - Majority of Pine died - cones remain
 - Vigorous growth of shrub species in all zones
 - Sphagnum colonies are stable in both vertical and horizontal growth, but ericaceous shrubs and reindeer lichen, are now covering established Sphagnum populations, reducing visual cover estimates.

DISCUSSION ABOUT PEER REVIEWING ARTICLES (SH/JJ)

- Published articles: All potential new articles to be reviewed by SH and RW/MM. SH will send to specific SAP members for review, if warranted, and also copy to other SAP members for their information. The SAP members are not expected to provide a peer review of the article, just to look at specific sections of the article that have been flagged as potential concerns and may require their expert comments. RW/MM to change the clause on new permit applications to state that, if the SAP has requested changes to the article, the authors must provide a revised version for SAP review prior to submitting to a journal. There was also a suggestion to request that the authors nominate a SAP member to the journal as one of the peer reviewers.
- General approach to peer review process
 - The following clause was added to the MV data sharing agreement for data shared with academic researchers:

“Any manuscripts that will be submitted to journals for publication shall be provided to the Burns Bog Scientific Advisory Panel (SAP) through Metro Vancouver West Area Parks for review at least two weeks prior to submission. This request applies to original submissions as well as revisions. Conference papers that will be included in proceedings shall also be reviewed by the SAP. The purpose of the review is to ensure accuracy of academic content relating to Burns Bog. If you intend to publish your research from the BBECA, we request that you send your manuscript to Robyn Worcester (Robyn.Worcester@metrovancouver.org) or Sarah Howie (showie@delta.ca) for circulation to the SAP. The intention of the SAP review is not to control or influence what is published, but to ensure that statements regarding Burns Bog are factually accurate.”
 - The same clause was added to the BBECA research permit
 - A list of all past researchers doing work in the bog was created from research project applications
 - An email was sent to the above list of people to express the same messaging

REVIEW SCIENTIFIC RESEARCH STRATEGY (SH)

See attached: “BBECA Scientific Research Strategy Status Update 2018”

- SAP –Are we missing any other areas for water level monitoring?
 - Data gaps in NE corner of BBECA
- Next steps - Combining water and veg data – good summer student position
- DM might have an intern this summer who could analyze the water level and vegetation monitoring data.
- DM might have a colleague with students who could digitize Thomas Munson’s hand-drawn Sphagnum plot maps and analyze changes over time.
- SAP - Water Chemistry – need more?
 - Doesn’t change a lot
 - Maybe a ‘chem blitz’ every 5 years or so, particularly at the edges of the bog.
 - PW pointed out that chemistry is temporally variable and recommended finding a researcher to look at diurnal variation first, preferably with automatic sensors at a high frequency, before attempting the blitz. Also, compare these results to rainwater quality. EC and pH logger data are already available from the northern

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- boundary ditch; SH to review for diurnal and seasonal variability. Can compare with YVR rain water quality data.
 - Might be good to look at diurnal changes – using data loggers for weekly/diurnal sampling
 - Testing after fires – find out what water is being used and test that as well.
 - Sediment may have a bad effect
 - SAP – Veg monitoring
 - Join part of world-wide network
 - Funding available
 - PW: Long-Term Ecological Research which is an NSF funded program in the US. There is an International version in Europe.
 - EMAN in Canada did have some partners using the LTER protocols - those were with Parks Canada and The Forestry Service of NRCAN. BC also have some long term monitoring that is similar.
 - It would be good to have a connection and to use common protocols.
 - RW/MM to consider whether vegetation plots in Burns Bog could be added to this larger program.
 - Peat formation monitoring - How to measure?
 - Ground penetrating radar
 - SAP recommended using ground-penetrating radar every 10 years to track peat accumulation.
 - Tree Ring analysis – DM had a contact to share
 - DM might know a new biogeographer who could be interested in undertaking the work on hemlocks that was suggested by the SAP in 2017 (e.g. tree ring studies)
 - The review of the Research Strategy was very quick. In future, it would be helpful to dedicate a half-day meeting to this subject.

DATA MANAGEMENT/SHARING (RW)

- MV had a consultant to create geodatabase for BBECA
- Created a plan to ensure the database is complete and up to date
- Redoing the website will happen eventually – we can post articles there if desired
- Next steps:
 - Ask SAP when we find gaps in metadata
 - Connect tables w/ data to special files
 - Create file layer to give researchers/advisors
 - Plan for 2019 GIS intern
- Applied for but did not receive a Sustainable scholar position to plan an Open Source Database Creation for the BEBCA
- Regional planning team has indicated that we can create an open data set for the BBECA in the MV Open Data Catalogue
 - All file types supported – .xls, .shp, .zip, etc